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The Great Stagnation: What Can Policymakers Do?

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**The Annual Peston Lecture
delivered at Queen Mary, University of London
on 5th March, 2013**

Executive Summary

The UK is not Japan

- Although the economic recovery in the UK has been disappointing, it is inappropriate to either assert that Japan's two lost decades illustrate the ineffectiveness of stimulative monetary policy or that the UK is predestined to perform as badly as Japan. Recall that the UK has, so far, avoided the deflation that held back the Japanese economy. One could, instead, argue that Japan illustrates the pitfalls associated with insufficiently aggressive monetary policy. Hence, it is appropriate to consider how we might make monetary policy more effective in the UK.

The Importance of the Effect of Inflation Expectations on Share Prices to the Debate on Amending the Monetary Framework

- Governor-designate Mark Carney has initiated a debate on amending the monetary framework, including looking at nominal GDP ("NGDP") targeting. Recall that unconventional monetary policy works, in part, through its effect on asset prices, including equities. Hence, it is important to accurately anticipate the effect of a change in the way we set monetary policy on the equity market.
- Twenty-five years ago, the consensus amongst academics and practitioners alike was that higher inflation expectations had a negative association with price-earnings multiples and equity prices. However, in a near zero-rate world, it would be reasonable to expect a positive association. We provide empirical evidence illustrating that the relationship did indeed switch sign in the UK around the beginning of this century. This "regime switch" is not unique: the sign had previously switched soon after the end of WWII.
- This suggests that, while more aggressive monetary policy is likely to be desirable in the short-run, it would be unwise to adopt strategies like NGDP targeting that end up "tying the hands" of policymakers as it will be important that they are able to be flexible lest higher inflation expectations start hurting share prices. Such policy flexibility is also likely to be needed if, say, the fall in sterling were to become disorderly. On those grounds, conditional forward guidance might be a preferable alternative.

"Helicopter Money" As an Alternative to Current QE

- We discuss evidence that suggests that the current quantitative easing ("QE") policy of buying gilts is not particularly effective. On theoretical grounds, a money-financed fiscal expansion could plausibly be rather more stimulative. We recommended this before, and continue to believe that it should be tried. Vouchers, financed via a "helicopter drop", could be used to promote consumption. Or, they could be used – in the form of a similarly funded temporary tax incentive – to stimulate investment. Of course, if the effect on inflation expectations is uncomfortably high, corrective action can be taken. But we won't know that until we have tried it.

Keywords: Annual Peston Lecture; tax incentives; inflation; stock market; monetary policy

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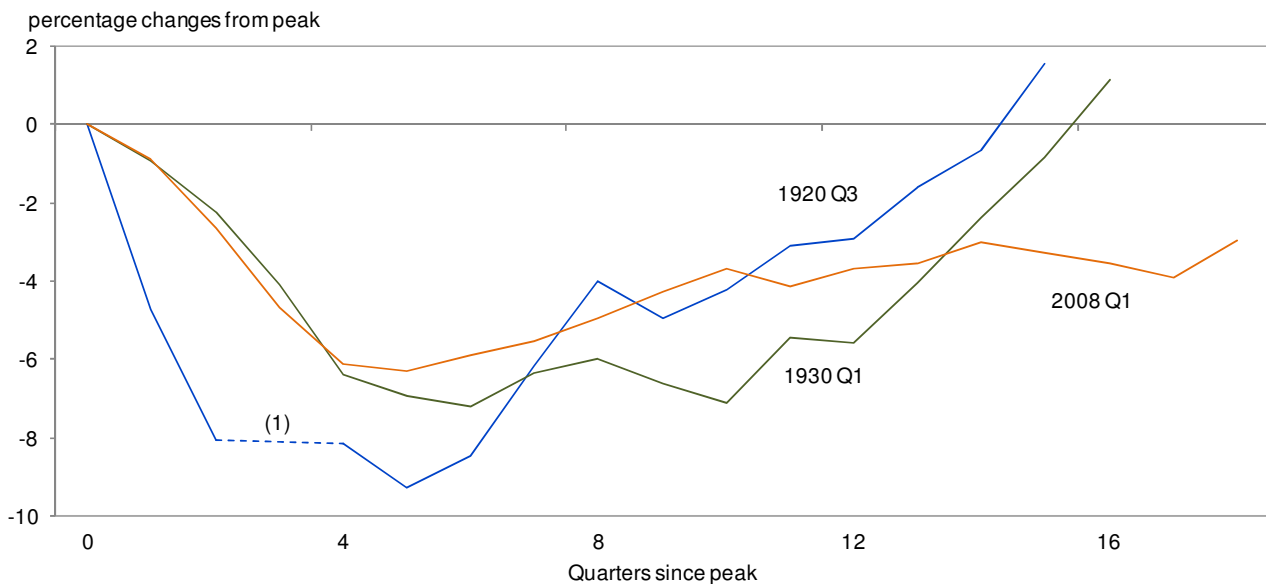
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THE GREAT STAGNATION

It is now widely accepted that the United Kingdom economy's recovery from the recession associated with the "Global Financial Crisis" (GFC) has been disappointing by historical standards.

Charts 1 and 2 show that the current recovery has been rather weak when compared to previous bounce-backs over the past century or so – even if we include those from the 1920s and 1930s.¹

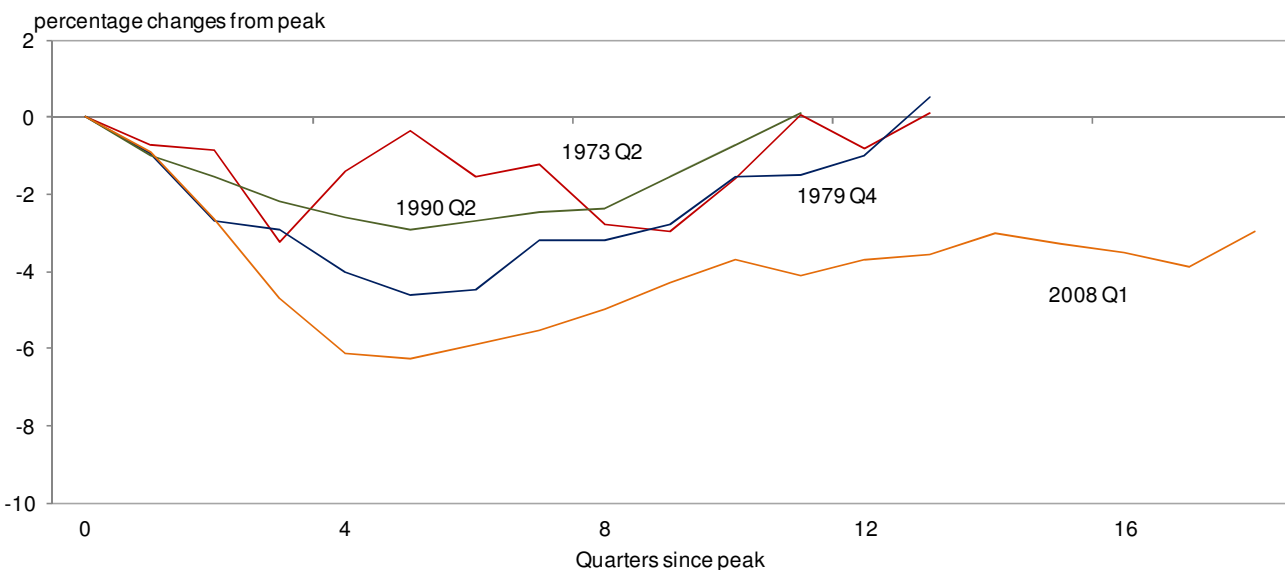
Chart 1: Putting the recent UK recovery into historical perspective: The inter-war experience



(1) Omits an erratic fall due to coal strike from April to June 1921.

Source: Office for National Statistics and "Monthly GDP estimates for Inter-War Britain", by Mitchell, J., Solomou, S., and Weale, M., *CES-ifo working paper*, no. 3602, September 2011.

Chart 2: Putting the recent UK recovery into historical perspective: The post-WWII experience



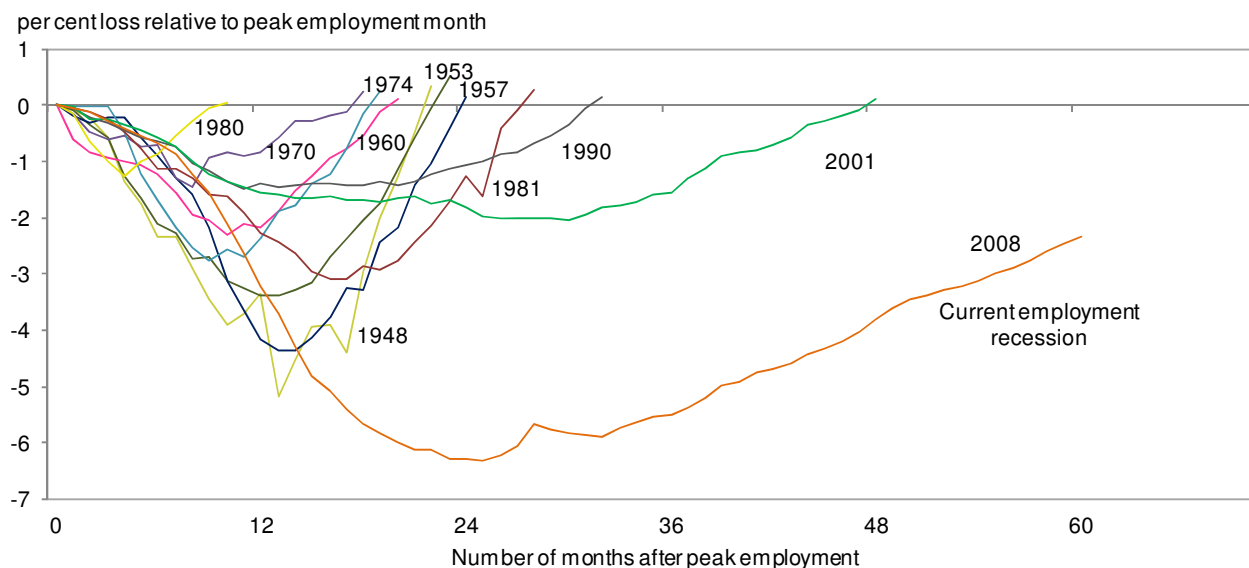
Source: Office for National Statistics and Wadhvani Asset Management LLP.

¹ See "Monetary policy in a weak economy", by Weale, M., speech given at the National Institute of Economic and Social Research, 25th November 2011 available at...

<http://www.bankofengland.co.uk/publications/Pages/speeches/2011/535.aspx>

While the United States has done somewhat better than the UK since the GFC, in terms of GDP, it is appropriate to remind ourselves that the improvement in the labour market there has been rather sluggish when compared with previous recoveries in the post-WWII period, as shown in Chart 3.

Chart 3: Comparing the current U.S. jobs recovery with other post-WWII recoveries



Source: Datastream and Wadhvani Asset Management LLP.

This poor economic performance is, increasingly, leading to fears that many developed economies might also experience “two lost decades” – as Japan has done since its asset price bubble burst in the late 1980s (and as, indeed, has Italy). Worryingly, the outgoing Governor of the Bank of Japan (BoJ), Masaaki Shirakawa, has argued that the Japanese experience is highly relevant to other developed economies today.² In particular, he contends that the size of the “excess debt” pre-crisis in the US and Europe implies that:

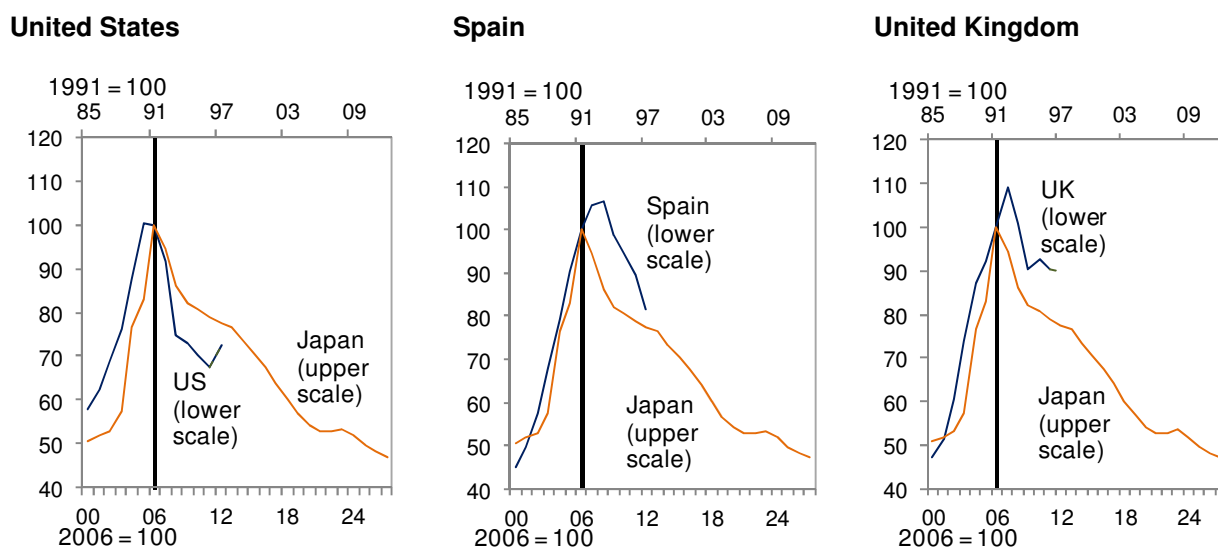
“...a lengthy period of adjustment is inevitably required.”

Chart 4 (next page) contains a comparison of real estate prices in the US, UK and Spain pre- and post- the GFC, versus a series for Japanese land prices before and after its bubble burst.³

² See “Deleveraging and growth – is the developed world following Japan’s long and winding road?”, by Shirakawa, M., lecture given at the London School of Economics and Political Science, 10th January 2011, available at... <http://www2.lse.ac.uk/publicEvents/events/2012/01/20120110t1830vOT.aspx>

³ These graphs were contained in Mr Shirakawa’s 2011 paper, referenced in footnote 2, but we have updated them to include the past two year’s worth of data.

Chart 4: Real-estate prices after “bubbles” collapse: Comparing Japan’s experience in the 1990s with post-GFC experiences in the United States, Spain and the United Kingdom



Source: Shirakawa (2011), *op. cit.*, Datastream and Wadhvani Asset Management LLP.

Mr Shirakawa's contention is that the adjustment to date in real estate prices in the American and European economies is rather modest relative to Japanese experience, and that there is, therefore, still a long way to go – i.e. for them to fall further. He also points to other similarities between Japan back in the 1980s/1990s and the US and Europe now, including the evolution of interest rates.

Further, seemingly in despair, he warns us that:

“...while monetary easing can affect the economy by bringing forward future demand... available future demand gradually decreases as monetary easing is prolonged.”

More recently, we have seen the outgoing Bank of England (BoE) Governor, Mervyn King, echo similar sentiments when he spoke of the “ever-steeper hill” that policy needs to climb.⁴

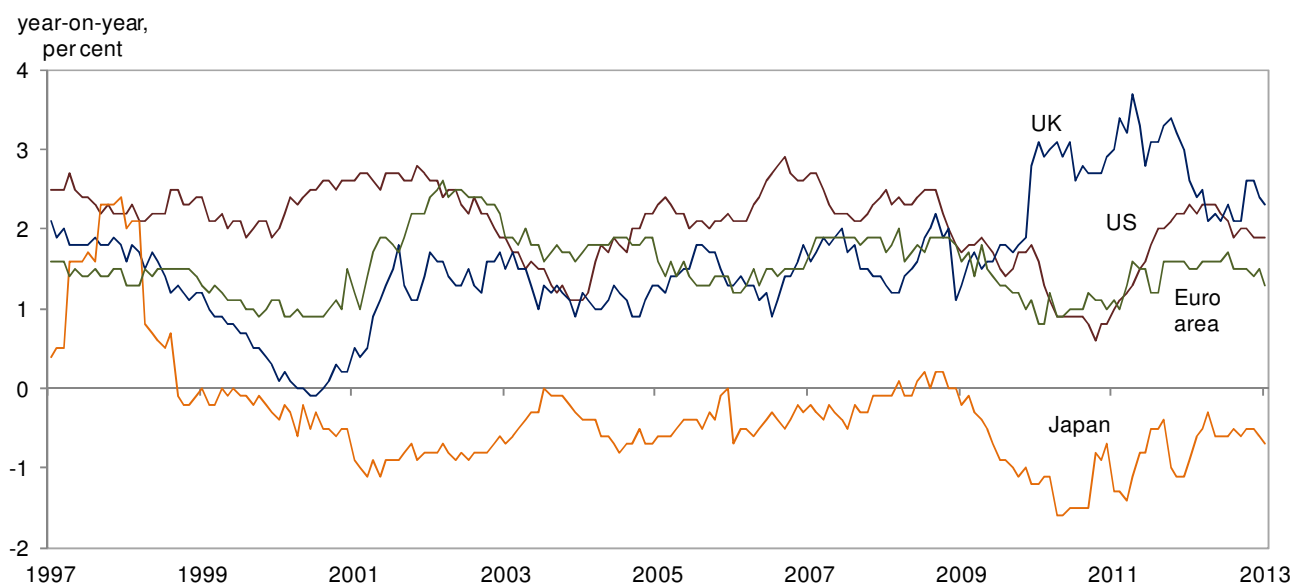
Should we then just prepare ourselves to repeat the Japanese experience for two lost decades?

⁴ In discussing whether monetary stimulus is going to be less effective than in the past in bringing forward spending from the future, Mr King considered if it was possible “to persuade people to spend more money today, when they know that the long-run path of spending is going to be lower than they used to think”. In these circumstances, he argued that “...you can bring it [some spending] forward for a period, but you can’t go on doing it indefinitely. It’s as if you’re running up an ever-steeper hill.” For details, see the Bank of England’s *Quarterly Inflation Report Q&A*, 13th February 2013, available at... <http://www.bankofengland.co.uk/publications/Pages/inflationreport/2013/ir1301.aspx>

THE KEY DIFFERENCES BETWEEN JAPAN AND THE US/UK/EUROPE

A key reason for being more optimistic about the prospect for the UK/US/Europe versus that of Japan is that policymakers here and in the United States have hitherto avoided the deflation that has plagued the Japanese economy, as shown in Chart 5.

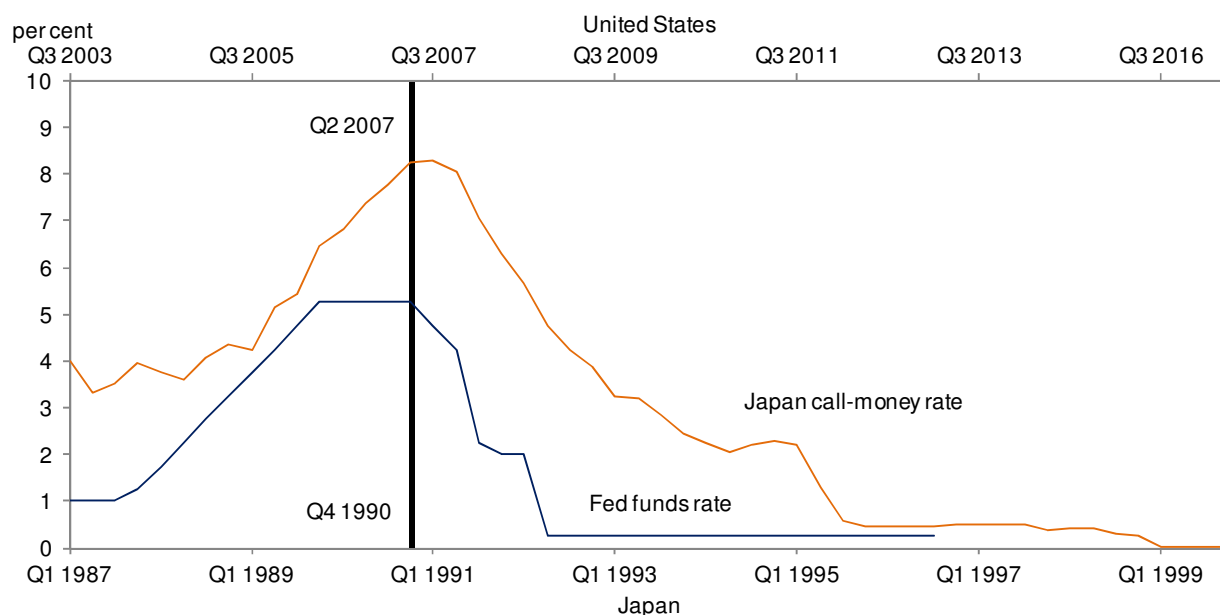
Chart 5: Core inflation in Japan, the United States and Europe



Source: Bloomberg and Wadhvani Asset Management LLP.

In part, this was because the BoJ was slower to ease monetary policy after their bubble burst. For example, it took the BoJ more than five years to get official rates below 1%, whereas it took the Fed about eighteen months to do so, as shown in Chart 6.

Chart 6: Comparing the Fed and BoJ's policy response to the bursting of their bubbles*



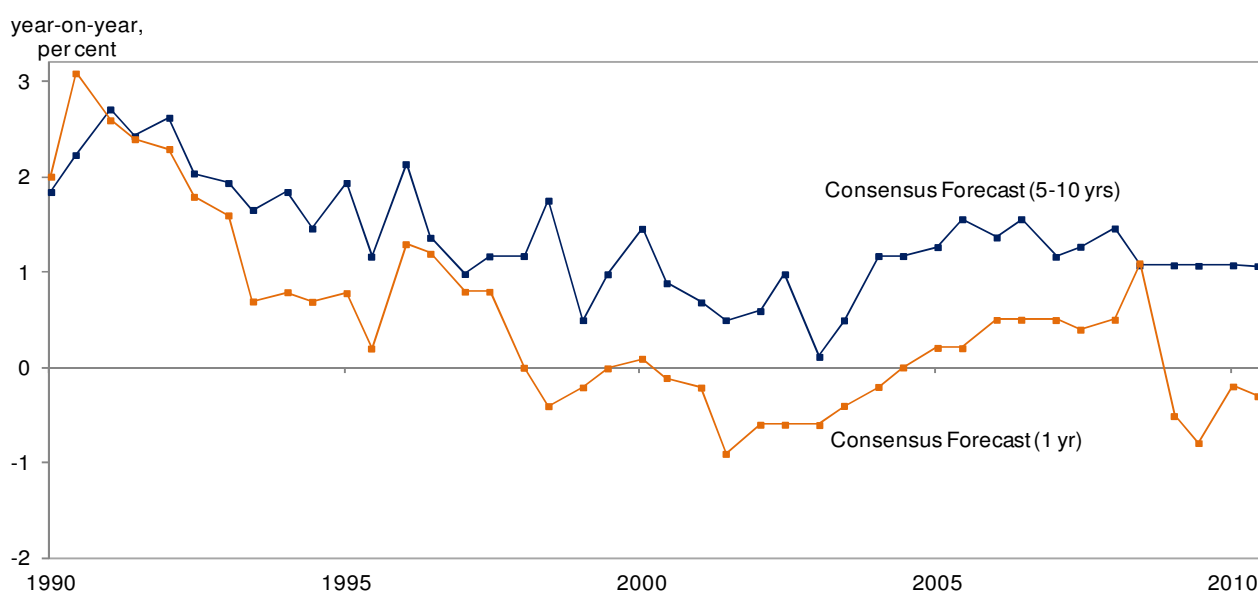
* This chart is an updated version of a graph contained in, "Is the United States Following in Japan's Footsteps?", by Sheets, N., Citi Economics, *Empirical and Thematic Perspectives*, 26th June 2012.

This was not the only mistake that the BoJ made.

Former BoJ Policy Board member Kazuo Ueda has pointed out that quantitative easing in Japan did not prove to be very effective because the central bank did not commit to an inflation target and thereby affect inflation expectations much.⁵

Recent BoJ research suggests that inflation expectations fell markedly during the 1990s – suggesting that the BoJ was not forceful enough in its actions to convince people that it would continue to deliver inflation close to the 2½% rate that it had averaged during the 1980s.⁶ By the early noughties, even 5- to 10-year-ahead inflation expectations were down below 1% (Chart 7). By contrast, inflation expectations in both the United States and the United Kingdom have been well anchored since the GFC, at close to their central banks' targets.

Chart 7: Inflation expectations post the Japanese bubble bursting*



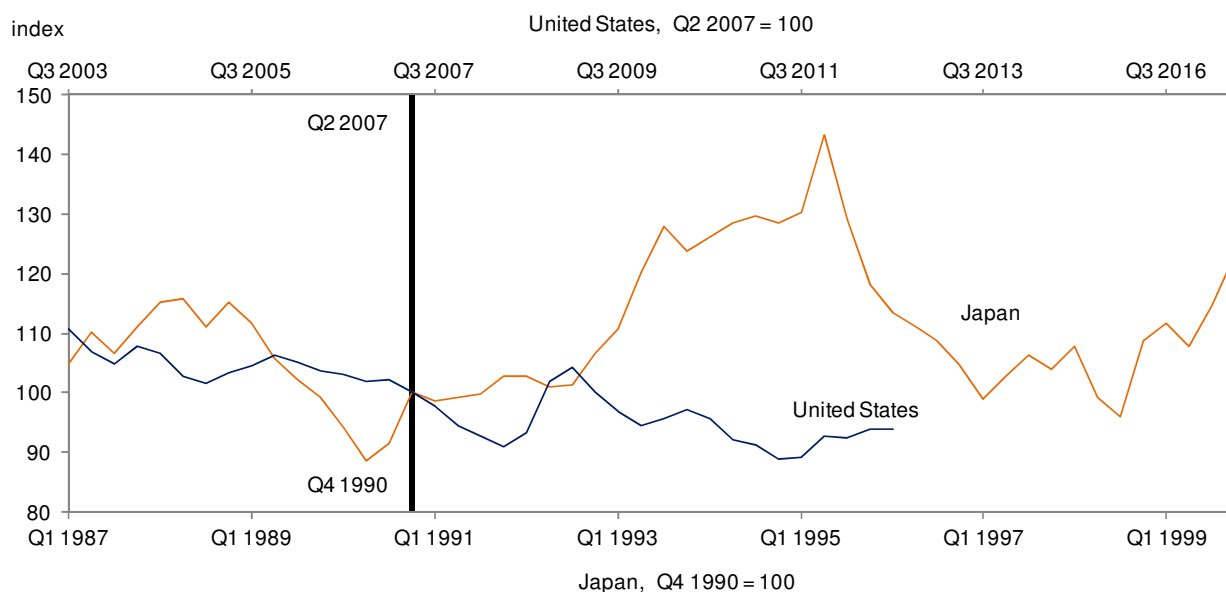
* This chart is based on Figure 6 in Nishizaki *et al* (2012) *op. cit.*. However, we have simplified the chart to show just survey-based gauges of inflation expectations (based on data from Consensus Economics Inc.). Adding in model-based and market-based measures of inflation expectations merely serves to corroborate the fall in inflation expectations which took place during Japan's lost decades.

The BoJ also made the mistake of allowing the yen to strengthen significantly after the bubble burst (Chart 8, next page) – a mistake that was not made by either the UK or US central banks after the GFC. Indeed, Mr Ueda's empirical work shows that quantitative easing (QE) moves in Japan did not meaningfully affect the exchange rate.⁷

⁵ See “Deleveraging and Monetary Policy: Japan since the 1990s and the United States since 2007”, by Ueda, K., *The Journal of Economic Perspectives*, vol. 26, no. 3, Summer 2012.

⁶ See “Chronic Deflation in Japan”, by Nishizaki, K., Sekine, T., and Ueno, Y., *Bank of Japan working paper*, no. 12-E-6, July 2012.

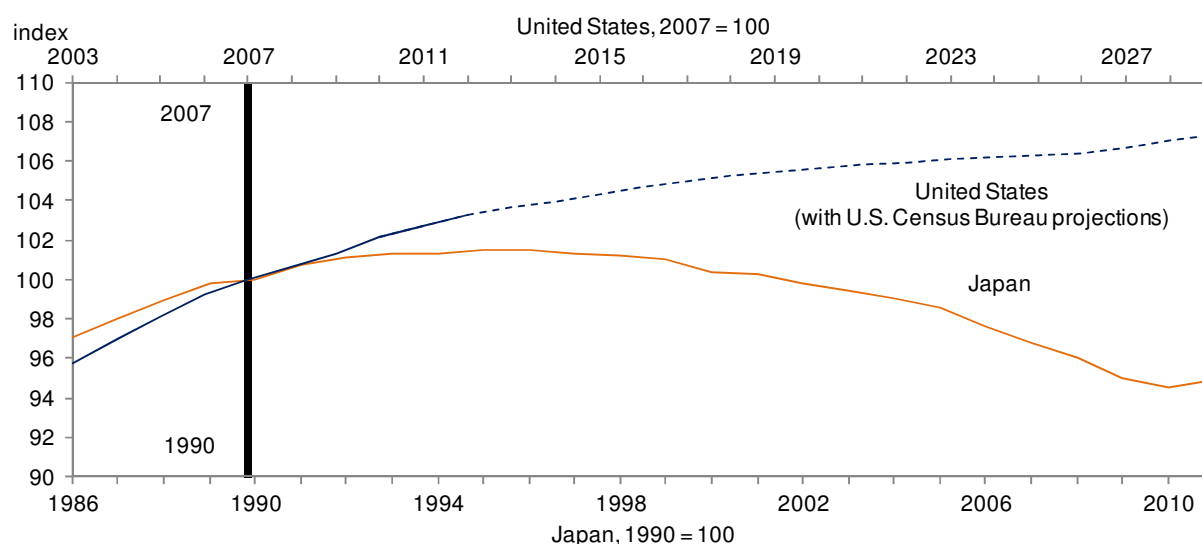
⁷ See “The Effectiveness of Non-Traditional Monetary Policy Measures: the Case of the Bank of Japan”, by Ueda, K., *Japanese Economic Review*, vol. 63, 2012.

Chart 8: Comparing how the yen and dollar responded to the bursting of their bubbles*

* This chart is an updated version of a graph contained in, “Is the United States Following in Japan’s Footsteps?”, by Sheets, N., Citi Economics, *Empirical and Thematic Perspectives*, 26th June 2012.

Structural factors also made life difficult for the BoJ. Indeed, the Japanese economy has been held back by demographic headwinds to a much greater extent than has either the United States or the United Kingdom. (Chart 9 illustrates in the case of the former.)

It is, therefore, appropriate to be more hopeful about the outlook for the UK and US than might be implied by Japanese experience.

Chart 9: Comparing trends in the population of working age in Japan and the United States*

* This chart comes from, “Is the United States Following in Japan’s Footsteps?”, by Sheets, N., Citi Economics, *Empirical and Thematic Perspectives*, 26th June 2012.

Since the new government announced that the BoJ will switch from having a (loose) inflation “goal” (of 1%) to a (precise) inflation “target” (of 2%), it is noticeable that inflation expectations have risen (by around one third

of a percentage point so far). And, of course, the effect on the yen of the new government's determination to pursue stronger growth and higher inflation more forcefully has been dramatic (the yen having fallen by some 12.5% in trade-weighted terms since the general election was called in mid-November), which reinforces that, had the BoJ had an inflation target (and a demonstrable track-record in achieving it) back in the 1980s, then Japan might have been more successful in avoiding its lost decades.

In recent months, several other central banks have also become more imaginative in terms of attempting to stimulate the economy. For example, towards the end of last year the Federal Reserve announced a state-conditioned threshold, whereby it will tie the decision to raise interest rates to specific economic outcomes (rather than to some specific time alone, as it did previously). And here in the UK, the BoE has recently become more willing to adopt a more flexible approach with respect to the time horizon to return inflation to target, as demonstrated by the minutes of its last MPC meeting.⁸ However, some have argued that, given how poorly the UK has performed post-GFC, we need to go beyond this. For example, the BoE governor-designate, Mark Carney, has initiated a debate on the monetary policy framework.⁹

HOW MIGHT THE MONETARY POLICY FRAMEWORK BE AMENDED?

Some (e.g. Blanchard *et al* (2010)) have argued that we consider targeting a higher inflation rate as it would reduce the real interest rate in a "liquidity trap" today, but also reduce the likelihood of encountering the zero lower bound in future episodes.¹⁰ Moreover, aiming for higher inflation can help reduce the real burden of debt.

Mr Carney argues against a move to a higher inflation target on the basis that:

*"...moving opportunistically to a higher inflation target would risk de-anchoring inflation expectations... if inflation is both higher and more uncertain, a higher inflation risk premium might result..."*¹¹

This is why he suggests looking at alternative mechanisms that permit higher inflation in the short-term without deviating from the long-term commitment to a fixed low inflation rate. One possible mechanism is to consider nominal GDP (level) targeting (or "NGDP" targeting), an idea that has been advocated frequently in the past.¹²

⁸ These also reveal that it will try too to become more transparent about what it is doing and why – arguing that "it was important to communicate clearly its willingness to bring inflation back to the target over a longer time horizon than usual, and its reasons for doing that". For details, see...

<http://www.bankofengland.co.uk/publications/minutes/Documents/mpc/pdf/2013/mpc1302.pdf>

⁹ See, for example, his written evidence to the Treasury Select Committee, available at...

<http://www.parliament.uk/business/committees/committees-a-z/commons-select/treasury-committee/news/dr-mark-carneys-answers-to-the-treasury-committees-questionnaire-published/>

¹⁰ See "Rethinking Macroeconomic Policy", by Blanchard, O., Dell'Ariccia, G., and Mauro, P., *IMF Staff Position Note*, 12th February 2010.

¹¹ *Op. cit.* (footnote 9).

¹² This was first developed by James Meade in his Nobel Prize lecture, available at...

http://www.nobelprize.org/nobel_prizes/economics/laureates/1977/meade-lecture.html Since then a voluminous literature has developed on the subject, although with a limited number of empirical studies having been performed. Last week, one of the BoE's deputy governors, Charlie Bean, looked again at the issue. His speech, available at <http://www.bankofengland.co.uk/publications/Pages/speeches/2013/640.aspx>, includes a number of references to the academic literature. As well as considering the levels form of NGDP targeting, he looks at a growth version – arguing

Here, the central bank attempts to keep policy easy until nominal GDP recovers past losses relative to the level that was expected to prevail at a given moment of time as per the past trend. This is expected to increase expected inflation in the short-term but keep longer-term expectations anchored.

Mr Carney recognises some of the difficulties associated with a NGDP framework, not least the problems associated with determining the potential growth rate. If the nominal target does not change when the underlying real growth rate changes, for example, then this forces a change in inflation in the opposite direction. (Failure to acknowledge and take into account a slowing of potential GDP growth leads to a higher inflation target.) However, he suggests a debate on whether the framework should be amended.

This has encountered some opposition from the current Governor, Mervyn King, who warns that:

*"In the 1960s, Britain stood out from much of the rest of the industrialised world in trying to target an unrealistic growth rate for the economy as a whole, while pretending that its pursuit was consistent with stable inflation... the battle to bring inflation expectations down was long and hard."*¹³

While it is obviously appropriate to worry about dislodging expectations, a debate on the framework is surely overdue and potentially useful, especially when doubts are growing as to whether the existing form of QE is running into diminishing marginal returns.¹⁴

Currently, unconventional monetary policy works mainly through its impact on asset markets, notably equities.¹⁵ (As Mr King made clear just a few weeks ago, "in terms of equity prices – and indeed bond prices – the major factor pushing up prices has largely been the extraordinarily low level of interest rates which central banks have brought about".¹⁶) Therefore, we turn to an evaluation of the likely impact of a change in inflation expectations on share prices as an important consideration in this debate.

that this would not represent a major change from the current regime. Rather, he suggests, it would require the BoE to explain and justify its actions differently.

¹³ See the speech given by Mervyn King to the CBI Northern Ireland Mid-Winter Dinner, Belfast, 22nd January 2013, available at... <http://www.bankofengland.co.uk/publications/Documents/speeches/2013/speech631.pdf>

¹⁴ One example of growing doubts amongst MPC members about the benefit, per pound spent, of further gilt purchases, is Charlie Bean's speech (entitled "Central banking in boom and slump") from last October, in which he suggested that although QE would help lower gilt yields, "the effect of lower yields may be weaker than usual at the current juncture". This is available at... <http://www.bankofengland.co.uk/publications/Pages/speeches/2012/617.aspx>

A second example, from September, was Paul Tucker's description of QE as working, but "even if in some respects it does not have the same bite it used to have". For further details, see... <http://www.euroweek.com/Article/3095839/Tucker-cools-QE-hopes-defends-City-innovation.html>

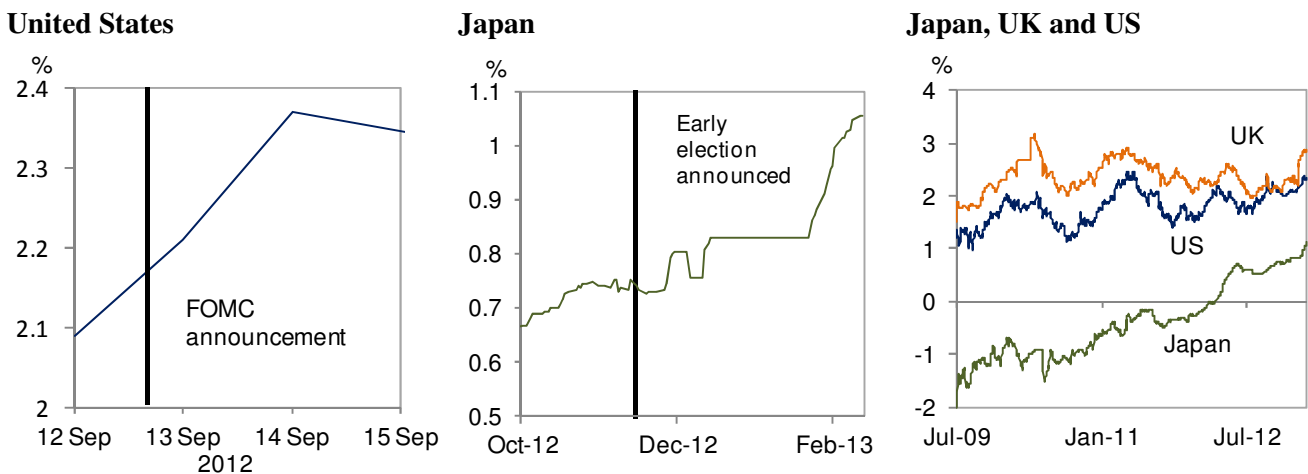
¹⁵ Indeed, some have argued that policymakers would do a lot of good if, more generally, they focussed on policy shifts (including structural reforms) which led to stock markets rising. See, for example, *Structural Slumps: The Modern Theory of Unemployment, Interest and Assets*, by Phelps, E., Harvard University Press, 1994.

¹⁶ See page 13 of *Quarterly Inflation Report Q&A*, referenced fully in footnote 4.

THE EFFECT OF INFLATION EXPECTATIONS ON SHARE PRICES

Since the autumn of last year it has become apparent that a number of central banks have either adopted, or talked about adopting, a more supportive monetary policy stance – to help foster growth. For example, as already alluded to above, the Fed has switched from conditioning its first rate hike on a future date to laying out the economic conditions which have to be in place for it to start the process of normalising rates; the BoJ has adopted a new (2%) inflation target; and Mr Carney has started the debate as to what the BoE might do to help the economy achieve “escape velocity”. One consequence of these shifts has been a significant, although not particularly large, rise in expected inflation (Chart 10).

Chart 10: Breakeven inflation rates where monetary policy has been eased of late



Source: Bloomberg and Wadhvani Asset Management LLP.

Those with a long memory will no doubt worry that this rise in inflation expectations might depress the stock market, and thereby perhaps harm prospects of a stronger recovery. After all, back in the high-inflation 1970s, most academics argued that raised inflation, and expectations thereof, would lower share values. The Nobel-Prize-winning economist, Franco Modigliani, for example, argued that most equity analysts, and investors, suffered from “inflation illusion” – failing to distinguish between nominal and real interest rates when discounting expected future profits, and perhaps too failing to allow for the gains to shareholders that accrue from depreciation in the real value of corporate liabilities when inflation eats into their real debts.¹⁷

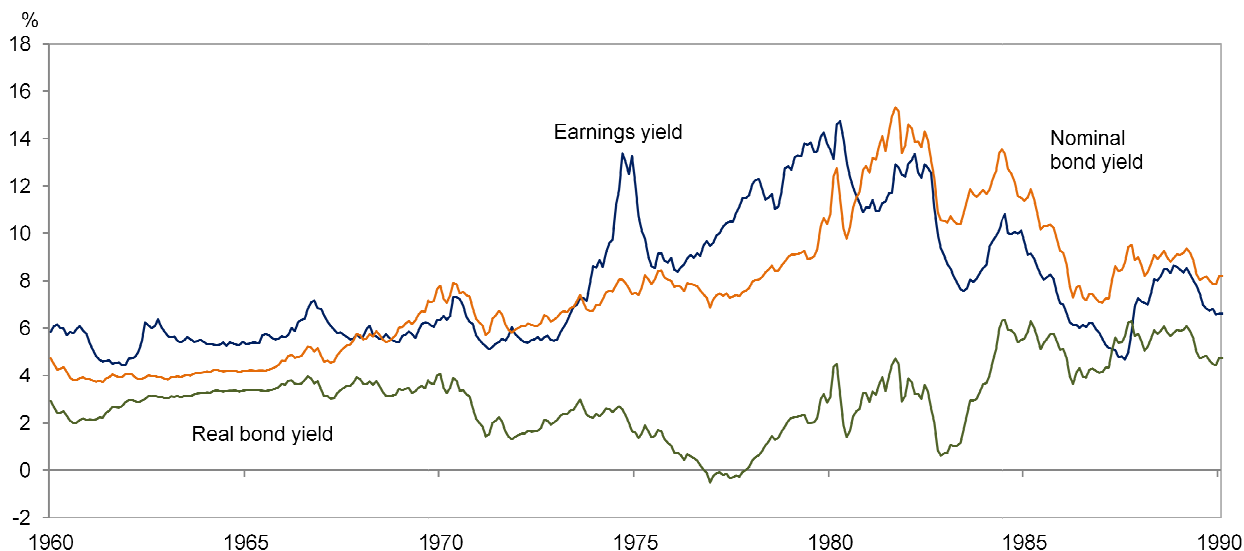
Those who make corporate investment decisions also appeared to suffer from inflation illusion – with the consequence that, as inflation rose, so firms curtailed their fixed capital formation.¹⁸ This was one of the reasons why the government of the day argued, back in the late 1970s and early 1980s, that lowering inflation would help promote sustained growth.

¹⁷ See, for example, “Inflation, Rational Valuation and the Market”, by Modigliani, F., and Cohn, R., *Financial Analysts Journal*, March-April 1979.

¹⁸ See *Business investment decisions under inflation: Theory and practice*, by Carsberg, B., and Hope, T., Institute of Chartered Accountants, 1976.

Modigliani and Cohn (1979) backed up their analysis with econometric evidence – illustrating, for example, a high (positive) correlation between the earnings yield and the nominal bond yield during the 1960s and 1970s (which continued through the 1980s too, as shown in Chart 11).

Chart 11: The earnings yield on stocks and bond yields in the United States when inflation was high*



* Note that we use a moving average of actual inflation to proxy inflation expectations when calculating the real bond yield.

Source: Datastream and Wadhvani Asset Management LLP.

Even in the absence of inflation illusion, the absence of index-linked corporate debt means that raised inflation is likely to raise the probability of firms going bankrupt, depress their share prices and lower employment – as I argued in a series of papers about 25 years ago.¹⁹ For, with fixed nominal debt, higher inflation leads to “front-loading” of debt-service repayments if nominal rates rise as inflation does (so as to maintain a fixed real interest rate). The empirical evidence points to a significant impact on corporate activity and on stock prices.

On top of these arguments, some academics have suggested that raised inflation may also be associated with greater uncertainty, and that this too may dent equity markets. Likewise, tax effects could result in a negative relationship between the two.

So, is it therefore inevitable that raised inflation expectations must dent stock markets – and, therefore, something that policymakers should attempt to avoid at all costs if they wish to promote stronger activity?

We judge not. After all, there are a number of reasons to suspect that, in certain circumstances, the relationship between inflation expectations and the stock market may be *positive*, rather than negative.

¹⁹ See “Inflation, Bankruptcy, Default Premia and the Stock Market”, by Wadhvani, S., *The Economic Journal*, vol. 96, no. 381, March 1986, and, “The Effects of Inflation and Real Wages on Employment”, by Wadhvani, S., *Economica*, vol. 54, February 1987.

Take, for example, the standard text-book theory, that goes back to Irving Fisher (1930). In this sort of world, nominal rates of return on all assets rise one-for-one with expected inflation – with the real and monetary sectors divorced from each other (with the former dependent on factors such as the rate of time preference and productivity).²⁰

In a world in which short-term interest rates are pegged near zero, and in which deflation prevails (or threatens to do so), it may well be that higher inflation can be helpful to policymakers – as it helps achieve lower real interest rates. Thus, it ought also to be helpful to firms, and to their valuations. Similarly, in a situation in which deflation is occurring, then the real burden of corporate debt must be rising. So, if inflation expectations can be raised in these circumstances, so the real liabilities can be lowered, boosting prospects for firms.²¹

A third reason why raised inflation expectations might sometimes be supportive of the stock market is that, in circumstances like those of today, such an increase might foster greater confidence that future growth will prove to be resilient – say, because policymakers aim for a slightly higher inflation target in more normal times and so provide themselves with more room to cut rates were large adverse shocks to hit the economy again.²²

All these arguments rather hint that the impact of inflation on stock prices may well be time-varying – depending upon what “regime” we’re in. When economies are stagnating, interest rates low and deflation risks abound, perhaps the linkages between inflation expectations and the equity market are rather different from periods when inflation is high and volatile, growth strong and interest rates at or above their neutral rate?

When we consider what the data tell us, as opposed to the theory, we are lucky in the UK in having index-linked gilts data right back to the mid-1980s – allowing us to construct 25 years of market expectations of future (“breakeven”) inflation. Also helpful, from an econometric point of view, is the fact that these data show significant variation in expected inflation – from as high as (just under) 8% to as low as (just above) 1%.

When we use a “rolling-window” to estimate the relationship between this measure of expected inflation and stock prices, we find very strong evidence of a “regime change” occurring towards the end of the last century/the beginning of this one, as shown by Chart 12.

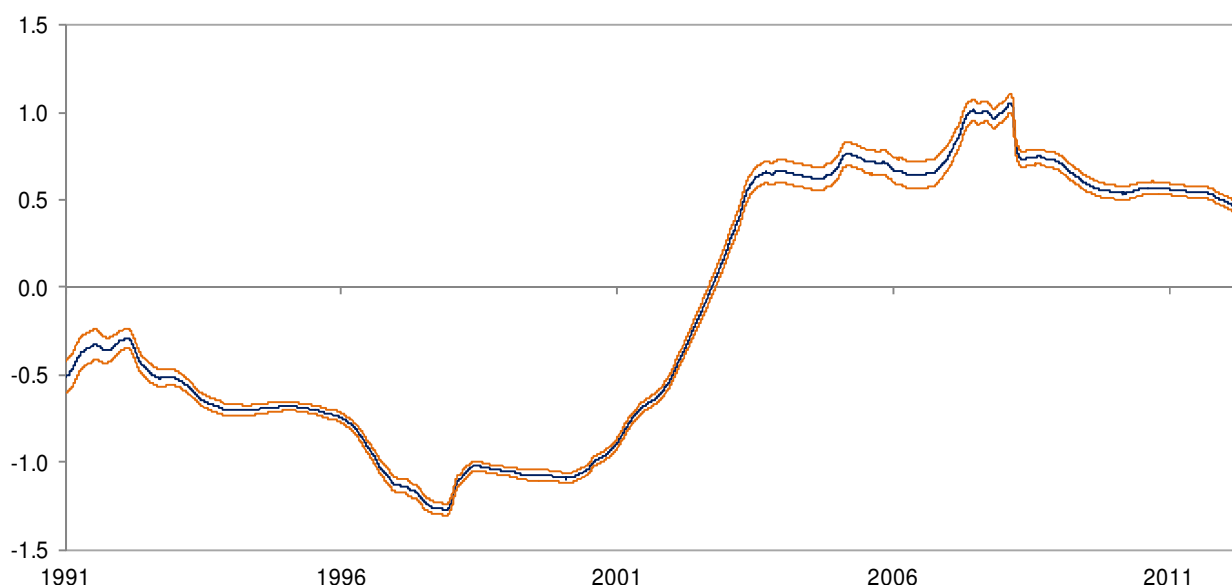
²⁰ The classic reference here is *The Theory of Interest*, by Fisher, I., New York: The Macmillan Company, 1930.

²¹ Again this is an argument with a long history, going back to “The Debt-Deflation Theory of Great Depressions”, by Fisher, I., *Econometrica*, vol. 1, October 1933.

²² This argument has been made by, *inter alia*, the IMF’s Chief Economist, in “Rethinking Macroeconomic Policy”, by Blanchard, O., Dell’Ariccia, G., and Mauro, P., *IMF Staff Position Note*, SPN/10/03, February 2010.

Chart 12: Rolling regressions suggest a shift in the relationship between UK stock prices and inflation

Coefficient pertaining to inflation expectations*



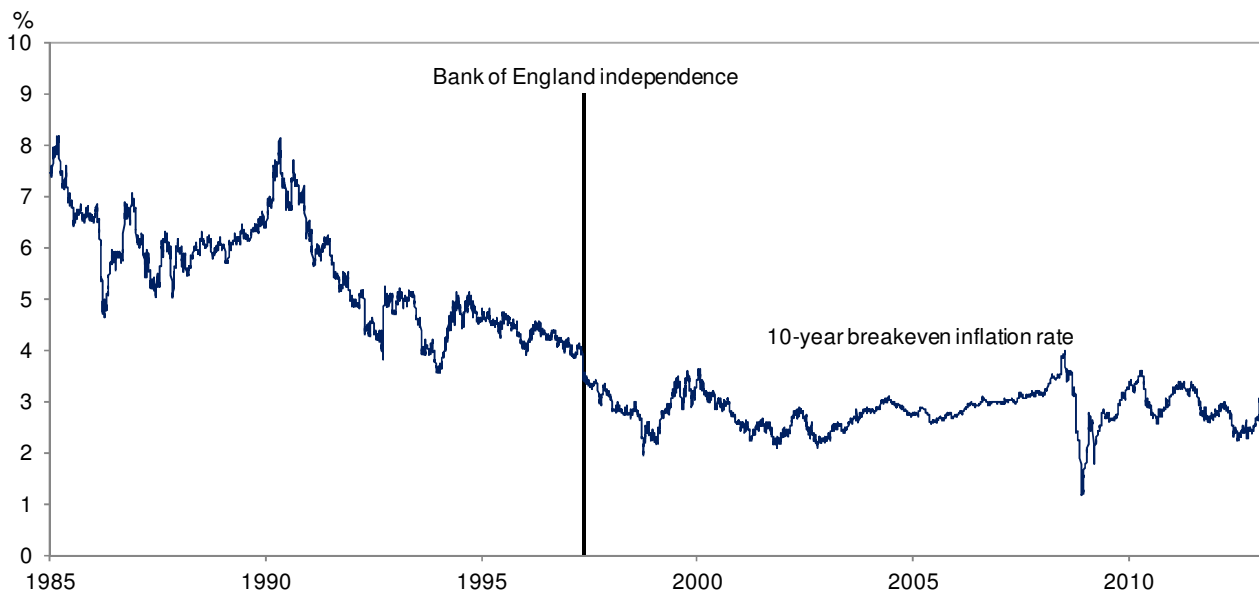
* Note that the regressions use a window length of about seven years (1750 working days), using the FTSE100 as the dependent variable, and 10-year breakeven inflation (derived using yield data relating to nominal and index-linked gilts) as the 'driving' variable. We use data from the mid-1980s onwards given that the market was not very liquid in its early years. The labels on the x-axis relate to the end of the window. So, for example, that at which the coefficient obtained first turns positive is dated in the chart as 4th June 2003. Note that the bands drawn around the coefficient estimates show the 95% confidence levels for these estimates. Whenever the band does not include the value zero, the estimated coefficients are statistically significantly different from zero. This, it turns out, is true nearly all of the time.

Source: Datastream, Bank of England and Wadhvani Asset Management LLP.

When we check the robustness of our findings, by making allowance for the possibility that real interest rates and/or real growth expectations might also drive equity markets (in line with a standard stock returns model), we find the same result holds.

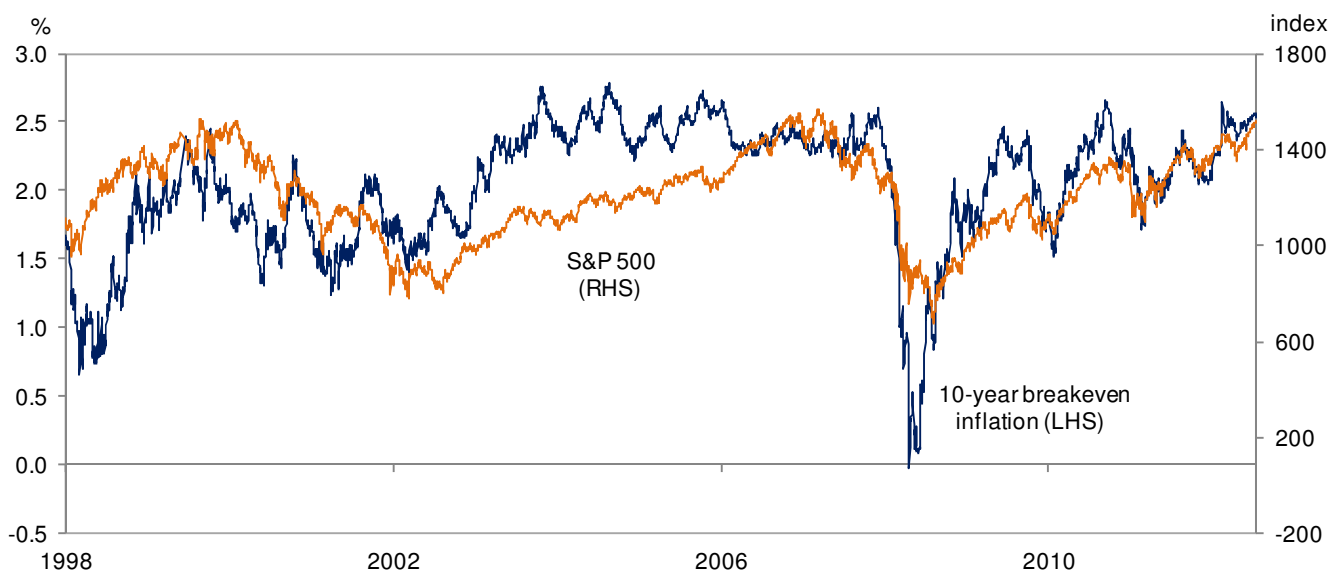
These results therefore strongly suggest that the UK is currently in a situation in which higher inflation expectations ought to help boost the stock market, rather than dent it.

Note that the regime change appears to have come about just a few years after the BoE was granted independence (and had got inflation down to close to its target), as shown in Chart 13 (next page).

Chart 13: 10-year breakeven inflation in the United Kingdom

Source: Bank of England and Wadhvani Asset Management LLP.

When it comes to the United States and Japan, we have rather shorter samples to work with – reflecting the fact that the markets for inflation-linked debt (i.e. the TIPS and JGBi markets, respectively) developed later in these countries than did the index-linked market in the UK. Nevertheless, similar regressions to those that we have run for the UK – relating stock markets to breakeven inflation using data for the noughties – suggest that much the same thing has happened in these countries too. In other words, over the past decade or so the stock markets in these countries have also exhibited a tendency to react well to evidence of raised inflation expectations, and poorly to evidence of lowered expected inflation. Chart 14 illustrates for the United States.

Chart 14: Stock prices and expected inflation in the United States

Source: Bloomberg and Wadhvani Asset Management LLP.

If we return to the UK case and look further back – using actual inflation, or some moving average of it, as a proxy for expected inflation – we find that the regime change that we have identified for the UK near the start of the millennium is not unique. Rather, consistent with prior theoretical considerations, it seems that the relationship between inflation and stock markets is not stable over time. In the two centuries before the First World War, for example, higher UK inflation generally helped boost its stock market. Between the two world wars, the relationship became less secure. After the Second World War, a negative relationship between the two emerged.²³ Table 1 illustrates, updating the post-WWII analysis with data up to the end of the 20th century.

Table 1: The effect of inflation on excess stock returns over the last three centuries

Sample period	Coefficient on inflation	t-ratio
1705-1913	0.19	2.1
1914-49	0.16	0.4
1950-99	-0.97	-2.1

Source: Mullins and Wadhwani (1990), estimates updated.

So, the recent shift to a positive correlation between changes in inflation and the stock market may be a case of a “return to the norm” – with the second half of the twentieth century having been the exception. It seems plausible that the pre-WWI relationship was a result of low nominal interest rates and low medium-term inflation expectations (on account of the gold standard, price-level targeting etc...), whereas the change in the relationship between inflation and stock prices during the post-WWII period reflected the fact that the distortions caused by inflation (due to valuation errors, the absence of index-linked debt and greater relative price variability) become rather more important at higher rates of inflation.

If so, then, were policymakers to regain traction again – with nominal interest rates eventually rising back to the sort of level that they averaged during the 1980s and 1990s – one might expect to see a reversion back to the regime in which higher inflation expectations typically depress stock prices again. In the short-run, however – with such a prospect a distant one at best – we would expect to continue to see a positive association between the two variables.

²³ This is all detailed in “The Effects of Inflation and Interest Rates on Stock Returns: Evidence from Three Centuries of UK Data”, by Mullins, M., and Wadhwani, S., *LSE Financial Markets Group Discussion Paper*, no. 72, 1990, and updated in “The US stock market and the global economic crisis”, by Wadhwani, S., *National Institute Economic Review*, January 1999.

SOME IMPLICATIONS OF THE INFLATION-EXPECTATIONS-TO-SHARE-PRICE LINK FOR POLICY

So, to conclude, there *does* seem to be some scope to do more in terms of taking actions that stimulate the economy, as we seem to be in a regime in which higher inflation expectations are still helping the stock market. Indeed, efforts by the BoE to help the economy attain “escape velocity” can, perhaps, be initially assessed by the impact on the stock market.²⁴ However, once the stock market starts to react badly, this should be an important signal to discuss stopping providing further stimulus. Hence, it will be important that the authorities retain some policy flexibility, and be able and willing to renege on a previous commitment to remain stimulative.

These findings also therefore have significance for the debate concerning nominal GDP targeting. Woodford and others have emphasised that a central bank that “ties its hands” to not raising interest rates until nominal GDP regains a particular target level can have an additional supportive effect on the economy.²⁵ However, this lack of flexibility does have its disadvantages. Simply aiming for, say, 5% nominal GDP growth may provide a “good” outcome (such as 3% growth and 2% inflation) or a “bad” one (such as 0% growth and 5% inflation). One can conceive of a situation when it is no longer economically desirable to continue to remain stimulative because inflation expectations are moving up “too much”, but the commitment to achieve a particular level of NGDP could then lead to inappropriate policy. For that reason, perhaps it would be better to combine some form of Fed-style forward guidance, in which a real variable is targeted (such as real GDP growth, or unemployment) alongside the (medium-term) inflation target, but to do so subject to a constraint – such as, that (medium-term) inflation expectations remain close to the BoE’s target too?²⁶

Of course, NGDP targeting does have other drawbacks. In attempting to re-run recent monetary history using a NGDP target, Charles Goodhart and his colleagues show that the policy settings implied by such a rule may well have led to inferior macroeconomic outcomes.²⁷

Another significant risk with the Woodford “tie-your-hands” approach is that it leaves open the possibility that some other issue emerges which makes the cost of having committed to not moving very high. The UK has a history of sterling crises, for example – and, indeed, a tendency of late for the pound to take the strain whenever doubts emerge about the economy’s performance and policymakers’ ability to deliver sustainable growth. Were, say, the recent drop in sterling to accelerate beyond reasonable estimates of “fair value” just

²⁴ It is interesting in this regard to see that Mervyn King shows little desire to help the stock market move up. Rather, as he made clear at the latest *Inflation Report* Q&A session, he feels that financial markets may have got ahead of themselves, arguing that, “I am concerned that some of the optimism in financial markets... may not be consistent with the speed at which the underlying data are likely to change”. Footnote 4 has the full reference.

²⁵ See, for example, “Methods of Policy Accommodation at the Interest-Rate Lower Bound”, by Woodford, M., paper presented at the Jackson Hole Symposium, *The Changing Policy Landscape*, August 2012.

²⁶ Of course, the BoE does already monitor different measures of inflation expectations closely, to ensure that they remain well anchored – looking not just at market-based measures (such as breakeven inflation rates) but also survey-based measures, of both households and professional economists. See, for example, “How has the risk to inflation from inflation expectations evolved?”, by Harimohan, R., Bank of England, *Quarterly Bulletin*, 2012 Q2.

²⁷ See “Monetary Targetry: Possible Changes under Carney”, by Goodhart, C., Baker, M., Ashworth, J., and O’Brien, A., Morgan Stanley, *UK Economics and Interest Rate Strategy*, 9th January 2013.

after a new framework incorporating commitment had been introduced, the authorities might well find that they have too limited room for manoeuvre to deliver their mandate. A full-blown crisis could follow.

While we have, heretofore, focussed on amending the framework, it is critically important to consider how one might actually improve the effectiveness of monetary policy. It is to this we turn next.

THE BOE'S POLICY OF BUYING GILTS: ARE THERE NO BETTER ALTERNATIVES?

Much of the empirical work on the effects of QE in Japan, the US and the UK agrees that it brings bond yields down. The results with respect to the effects on the equity market and the currency are more mixed. (In the case of Japan, where the academic literature is naturally the most extensive, a pre-GFC survey of previous empirical evidence suggested that “the findings on the effect on the foreign exchange rate are split between some effect and no effect”.²⁸ It found just one example of a statistically significant impact being reported on stock prices.

More recent Japanese research, which also includes more recent unorthodox policy efforts too, comes to similar conclusions. For example, Lam (2011) finds “no appreciable impact on the yen exchange rate” in the five monetary easing events that he studies, although he does report a short-term boost to the stock market in four of them.²⁹ Some Fed research into Japan's experiences discovered that introducing QE did result in a robust, positive effect on the flow of credit once banks' excess reserves rose.³⁰ However, it also reported that the “overall size of the boost was probably quite small” and that “the effect of liquidity on lending appears to have held only during the initial years of QE”.

Likewise, Kazuo Ueda – a former Board Member of the BOJ – has suggested that, although QE helped move some asset prices in the right direction (although rarely the yen), these moves were too small to make a meaningful difference to growth prospects.³¹ Worse still, even when they did move in such a way as to support activity initially – as, for example, sometimes happened with equity prices – the effect soon waned, thereby providing little impetus to business confidence, or to the real economy.

In the case of the United States, the majority of the academic studies focus on fixed income markets. A few papers, however, report some evidence to suggest that the Fed's aggressive QE stance may have helped lower the value of the dollar and helped boost stock prices.³²

²⁸ See “Effects of the Quantitative Easing Policy: A Survey of Empirical Analyses”, by Ugai, H., Bank of Japan, *Monetary and Economic Studies*, March 2007.

²⁹ This leads him to conclude that recent BoJ efforts have been more fruitful than their attempts to boost the economy were back in the 1990s and the first half of the 2000s. For details, see “Bank of Japan's Monetary Easing Measures: Are They Powerful and Comprehensive?”, by Lam, W., *IMF working paper*, no. WP/11/264, November 2011.

³⁰ See “Quantitative Easing and Bank Lending: Evidence from Japan”, by Bowman, D., Cai, F., Davies, S., and Kamin, S., *International Finance Discussion Paper*, no. 1018, Federal Reserve Board, June 2011. This is available at... <http://www.federalreserve.gov/Pubs/ifdp/2011/1018/default.htm>

³¹ For a full reference to this work, see footnote 5.

³² See “How “Unconventional” Are Large-Scale Asset Purchases? The Impact of Monetary Policy on Asset Prices”, by Rosa, C., *Federal Reserve Bank of New York Staff Report*, no. 560, May 2012, and “The Impact of a Central Bank's

When it comes to the United Kingdom, a BoE event study claimed that there was compelling evidence that QE led to gilt yields falling but admitted that “equity prices did not react in a uniform way in response to QE news”, while the total impact on sterling of five of the six events studied was close to zero.³³ The only sizable impact (of about 3%) came after the publication of the February 2010 *Inflation Report* – something that the authors admitted was “unlikely to have been a QE effect”.³⁴

More recent research is even less supportive of the notion that QE helped promote activity through the stock market or the exchange rate, concluding that, “Moving onto the exchange rate and equity prices, however, there seems to be little discernible QE effect”.³⁵ Moreover, even if the action of central banks buying bonds has these favourable asset market effects, the overall effect on output might be relatively muted at a time when “animal spirits” are subdued and the credit market is not functioning well. After all, as Charlie Bean put it last autumn, “a modest fall in the cost of capital may do little to boost investment spending when the environment is so dominated by uncertainty about the outlook for demand”.³⁶

This is why Michael Dicks and I argued in 2011 that the BoE’s estimates of the benefits of QE based on purchasing gilts were probably too high and that the time had come to diversify the tools that they used to stimulate the economy.³⁷ In that context, we recommended that measures be taken to improve credit supply, and also suggested that the BoE send vouchers to all households. (Of course, if policymakers wanted to focus on stimulating investment, as opposed to consumption, than a similar scheme – in effect, temporarily more generous investment allowances funded by the BoE printing money – might be preferable, especially as it would have some supply-side benefits.) We envisaged that the decision with respect to the vouchers would be coordinated with the government of the day, and could therefore be seen to be an example of a temporary fiscal stimulus.³⁸ For us, therefore, what we proposed was an example of monetary financing of a fiscal expansion, or “helicopter money”.

Bond Market Intervention on Foreign Exchange rates”, by Li, H., Cornell University, *Johnson Graduate School of Management working paper*, September 2012.

³³ See “The financial market impact of quantitative easing”, by Joyce, M., Lasaoa, A., Stevens, I., and Tong, M., *Bank of England working paper*, no. 393, August 2010.

³⁴ Indeed, in a later version of the paper, the authors chose to ignore the event study results, preferring to assume that QE had boosted equity prices by 20% when attempting to gauge the impact of QE on GDP. (Had they chosen to stick with the event study results, they would, of course, have had to have reported very small effects on the economy.) For details, see “The United Kingdom’s quantitative easing policy: design, operation and impact”, by Joyce, M., Tong, M., and Woods, R., Bank of England, *Quarterly Bulletin*, 2011 Q3.

³⁵ For further details, see “The Financial Market Impact of UK Quantitative Easing”, by Breedon, F., Chadha, J., and Waters, A., Queen Mary, University of London, *School of Economics and Finance working paper*, no. 696, August 2012.

³⁶ This comes from the speech referenced in footnote 14.

³⁷ See “Quantitative Easing And Policy Impotence”, by Wadhvani, S., and Dicks, M., Wadhvani Asset Management, *Economic Outlook*, October 2011.

³⁸ For example, it would be desirable if the Chancellor of the Exchequer would sign the vouchers.

Of course, the concept of helicopter money has a distinguished intellectual pedigree, having been examined extensively by the likes of Milton Friedman and by Ben Bernanke.³⁹ Here, one finances a *temporary* increase in the fiscal deficit through a *permanent* increase in the monetary base. By contrast, the QE conducted by the BoE is associated with an increase in the monetary base which is supposed to be temporary. Because of this, Willem Buiter argues that one should, on theoretical grounds, expect helicopter drops to be *more* stimulative than buying gilts.⁴⁰ Furthermore, unlike conventional fiscal policy, where Ricardian equivalence effects damp the effectiveness of a temporary fiscal stimulus, Mr Bernanke reminds us that money-financed tax cuts are more likely to be spent as:

“...no current or future debt service burden has been created to imply future taxes.”⁴¹

There are those who object to such “helicopter drops” because it is deemed to lead to “Zimbabwe-style” (hyper-) inflation. However, this is to misunderstand what can be done in this area. First, it is essential that the helicopter money be provided at the pure discretion of an independent central bank. Second, I assume that it is being deployed to finance a *temporary* fiscal stimulus (which, by definition, was true of the voucher scheme that we proposed).

Somewhat puzzlingly, Mervyn King has argued that a difficulty with helicopter money is that, unless the Bank has the ability to sell back the gilts it had purchased (which it would not have with a voucher scheme, as no assets would have been purchased), it risks losing “...control over monetary conditions...” and that it would “...lead ultimately to uncontrolled inflation.”⁴²

Willem Buiter, by contrast, argues – and persuasively so – that:

“Helicopter money, even in huge amounts, need not become inflationary ever.”⁴³

He points out that any inflationary increase impact of the permanently enlarged stock of base money can, in principle, be neutralised by the central bank by increasing bank reserve requirements or by raising the

³⁹ See, respectively, “The Optimum Quantity of Money”, in Friedman, M., *The Optimum Quantity of Money and Other Essays*, Adline Publishing Company, Chicago, 1969, and “Deflation; Making Sure “It” Doesn’t Happen Here”, by Bernanke, B., remarks by the Fed governor before the National Economists Club, Washington D.C., November 2002, available at... <http://www.federalreserve.gov/boarddocs/speeches/2002/20021121/default.htm>

⁴⁰ See “What More Can Central Banks Do To Stimulate The Economy?”, by Buiter, W., Citi Economics, *Global Economics View*, May 2012.

⁴¹ This quote comes from “Some Thoughts on Monetary Policy in Japan”, by Bernanke, B., remarks by the Fed governor before the Japan Society of Monetary Economics, Tokyo, May 2003, available at... <http://www.federalreserve.gov/boarddocs/speeches/2003/20030531/default.htm>

⁴² See the speech given by Mervyn King to the South Wales Chamber of Commerce, Cardiff, 23rd October 2012, available at... <http://www.bankofengland.co.uk/publications/Pages/speeches/2012/613.aspx> Note that, for similar reasons, he has dismissed the idea that the Treasury might cancel some of the gilts purchased by the BoE. Martin Brookes and Ziad Daoud have argued, on the other hand, that more than half of the stock could be cancelled without affecting the practicalities of the Bank being able to operate monetary policy effectively. Of course, it would represent another means of providing a helicopter drop in as much that it would mean a (partial) switch in financing of the budget deficit from bond-financing to money-financing. For details, see “Could the Treasury cancel the Bank of England’s gilts?”, mimeo, Brookes, M., and Daoud, Z., 15th January 2013.

⁴³ *Op. cit.* See footnote 40 for the full reference.

remuneration rate on excess reserves held by banks with the central bank to more appropriate levels, or by some combination thereof. In the case of the UK, the Treasury and the Bank of England would need to adapt the existing cash ratio deposit requirement into a reserve requirement regime, but this is easily done. In addition, the ECB has, in the past, attempted to control the inflationary consequence of the past issuance of base money by sterilising the increase in the base money stock by replacing reserves with non-monetary liabilities like ECB bills.

Hence, there is no technical reason why helicopter drops should be inflationary. Adair Turner has recently laid out the case for why helicopter money should not be considered taboo.⁴⁴ But he argued that it was not necessary to adopt this type of policy move currently as the economy is suffering more from supply-side issues than demand deficiency. Certainly it is the case that the potential GDP growth rate has slowed relative to what it was pre-GFC, but no one seems to think that the output gap is not substantial – i.e. that there is a demand deficiency issue too. But this is to miss the point. In any case, the real issue about helicopter money concerns whether it is the best tool for the job at hand, not whether the tool needs to be used currently. And, from that point of view, it seems clear to us that helicopter money is a much better tool than, say, the current QE “buying gilts” approach.

However, Adair Turner is surely correct in worrying about the “political economy” aspects of this, in that the unrestrained use of this tool can be very dangerous. However, as already emphasised above, I only envisage a possible role for this tool in the context of an independent central bank deciding that the economy needs stimulus in order to fulfil its remit, and that its existing tools are not working well.

Another objection to helicopter drops that is sometimes heard is that it entails the BoE entering the “...forbidden territory of fiscal policy”.⁴⁵ This is a rather peculiar objection as all that is entailed is the central bank financing a decision with respect to temporary fiscal stimulus that has been decided on by a democratically elected government.

Further, if a government did choose to introduce a voucher scheme, the Bank might, purely on monetary policy grounds, decide to finance that. Such a scheme would represent a combination of fiscal and monetary expansion. Currently, when the central bank buys gilts, the government does incur an additional fiscal cost by guaranteeing the central bank against losses on the gilts it purchases. In that sense, every time the BoE buys gilts under the QE programme, it is already engaging in fiscal policy too (albeit that it is co-ordinated with the government again).

Of course, Gavyn Davies is surely correct in warning that a policy using helicopter drops is not without its risks.⁴⁶ Specifically, in comparing it to conventional QE, he asserts that:

⁴⁴ See “Debt, Money and Mephistopheles: How do we get out of this mess?”, speech by Adair Turner to the Cass Business School, 6th February 2013, available at...
<http://www.fsa.gov.uk/library/communication/speeches/2013/0206-at>

⁴⁵ Again, this is an argument taken from Mervyn King’s speech referenced in footnote 42.

⁴⁶ See “Helicopters can be dangerous”, by Davies, G., FT blog, 17th February 2013, available at...
<http://blogs.ft.com/gavyndavies/2013/02/17/helicopters-can-be-dangerous/>

“It is much more likely that inflation expectations could rise markedly under permanent monetisation and, in my view, that is not a price worth paying for (perhaps temporarily) higher output.”

This is a legitimate concern. However, appropriate communication from the authorities can surely help with this. Recall that there were some lurid headlines when conventional QE was introduced too, but greater understanding did lead to more balanced media coverage.

Further, in some countries, the potentially larger effect on inflation expectations is actually what is desired. Specifically, in the current Japanese conjuncture, “Abe-nomics” has led to a depreciation of the yen and an increase in inflation expectations primarily because of expectations of what Governor-elect Kuroda might deliver. However, in the judgement of some, just expanding the conventional QE programme might disappoint the markets. On the other hand, an explicit helicopter drop may, because of its greater perceived effectiveness in stimulating demand, have a better chance of ensuring that the gains in inflation expectations are not reversed.

With respect to the UK, once again, if it is believed that money-financed fiscal expansion is likely to have a greater impact on output, then one would expect an associated increase in inflation expectations as a by-product. While Gavyn Davies is perhaps right in arguing that we do not “need” a further rise in inflation expectations *per se* in the UK (unlike Japan), the empirical evidence that we reported above with respect to the stock market suggested that we remain in a regime in which increases in inflation expectations are rewarded by higher equity prices. Hence, I do not see any compelling reason to oppose the rise in inflation expectations which might be associated with a policy that might help lift us out of the current stagnation with respect to output. Of course, one would keep this under review and if there were, for example, signs in any of the relevant financial markets that the helicopter drop was going down badly, then one could envisage either pausing, or even contemplating measures that reduced base money.

None of this is to dismiss a potential policy response that actually looks to be very likely to be forthcoming, and which must surely be a better approach than merely continuing to add to the stock of gilts purchased by the BoE – which is further efforts to stimulate the supply of credit to the household and non-financial corporate sectors. The *Funding for Lending Scheme* might help, although it is too early to say. Perhaps something similar for the non-bank financial sector could surely too be devised?

CONCLUSIONS

In tonight’s lecture, I would like to leave you with four main conclusions.

1. **The UK is not Japan:** Those who argue that the UK too will endure “a long and winding road” like Japan also tend to argue that monetary policy in the UK will lose its potency, as it supposedly did in Japan. However, these policy defeatists draw the wrong lesson from recent Japanese experience. An important reason why Japan has fared so poorly is that monetary policy has been insufficiently
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aggressive. Japan did not introduce an inflation target and attempt to explicitly boost inflation expectations until relatively recently. Indeed, for much of the period, the yen actually strengthened. Our interpretation of recent Japanese history is that it is very important to ensure that monetary policy is used appropriately.

2. **More can be done.** Mark Carney is right to argue that we are not yet “maxed out” and that forthright efforts with respect to monetary policy could yet help the economy achieve “escape velocity” – which we take him to mean a period of sustained above-potential GDP growth. In the short run, fears that that more aggressive monetary policy that boost growth might backfire because inflation expectations might rise are probably misplaced. We have argued that we are still in a regime where higher inflation expectations are likely to go hand-in-hand with higher equity prices.
3. **Possible changes in the monetary framework:** It is, however, important to monitor the impact of rising inflation expectations on asset prices. If we did let the inflationary genie out of the bottle and higher inflation came to undermine equity prices or destabilise the currency, dealing with the fall-out would just compound our current problems. This is why we believe that it is critically important that policymakers preserve their flexibility and do not, as some recommend, “tie their hands” by, for example, adopting nominal GDP targeting. Instead, conditional forward guidance might be preferable.
4. **What should be done.** We have argued that the current policy of the BoE buying gilts is not really working. Hence it is time to consider alternatives. In particular, in a “liquidity trap”, the time has come to consider a money-financed, temporary fiscal stimulus (or, so-called, “helicopter drop”). This could, for example, take the form of a voucher for every household or a temporary tax incentive to stimulate investment. This might well generate more spending than either the BoE buying gilts or a conventional tax cut that is not financed by the BoE. It is also time to experiment with other ways of improving credit supply.

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